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Friday
September 14, 1979

Part V

Department of Labor

Mine Safety and Health Administration

Explosives

DEPARTMENT OF LABOR

Mine Safety and Health Administration

30 CFR Parts 55, 56, and 57

Explosives

AGENCY: Mine Safety and Health Administration, Department of Labor.

ACTION: Final rule.

SUMMARY: These final rules amend 30 CFR Parts 55, 56, and 57 by adding a new standard which prohibits the loading of explosives or blasting agents into blastholes through drill steel or other devices which could be withdrawn from the hole after loading. This prohibition will give metal and nonmetal miners new protection from loading hazards in blasting operations where high water tables and unconsolidated strata impede drilling and loading.

EFFECTIVE DATE: January 14, 1980.

FOR FURTHER INFORMATION CONTACT: Frank Delimba, Chief, Division of Safety, Metal and Nonmetal Mine Safety and Health, Mine Safety and Health Administration, Room 717, Ballston Tower Number Three, 4015 Wilson Boulevard, Arlington, Virginia, 22203, Telephone: (703) 235–8646.

SUPPLEMENTARY INFORMATION:

I. Background Information

On November 9, 1977, Congress enacted the Federal Mine Safety and Health Amendments Act of 1977 [the "Amendments Act"], Pub. L. 95–164, 91 Stat. 1290 *et seq.*, which amended the Federal Coal Mine Health and Safety Act of 1969, Pub. L. 91–173, 83 Stat. 742, 30 U.S.C. 801 *et seq.*, (1976 ed.) and repealed the Federal Metal and Nonmetallic Mine Safety Act of 1966, Pub. L. 89–577, 80 Stat. 772, 30 U.S.C. 721 *et seq.* (1976 ed.) The resulting law, the Federal Mine Safety and Health Act of 1977 (the "Mine Act"), 30 U.S.C. 801 *et seq.* (1976 ed. and Supp. I (1977)), established for the first time a single safety and health statute applicable to all mining. These rules are promulgated under the special authority contained in section 301(c)(3) of the Amendments Act, 91 Stat. 1317, 30 U.S.C. 961(c)(3), (Supp. I (1977)) to continue rulemaking proceedings begun by the Secretary of the Interior, and the general rulemaking provision in section 101(a) of the Mine Act, 91 Stat. 1291, 30 U.S.C. 811 (Supp. I (1977)).

In October of 1974, and again in March of 1976, the Federal Metal and Nonmetal Mine Safety Advisory Committee (MNMSAC), recommended that the Secretary of Interior adopt a standard to prohibit the loading of explosives or blasting agents into blastholes through hollow drill stem equipment. However, further rulemaking was deferred pending the evaluation of an alternative method of loading explosive material using expendable tubes. This evaluation was completed in March of 1978 under a Bureau of Mines research contract (Evaluation of Alternatives for the Kelly Bar Method of Loading Explosives, Contract No. J–0177005).

To continue the rulemaking and to ensure full public participation, a revision of the standard recommended by MNMSAC was drafted and circulated by MSHA to interested persons on July 25, 1978 for comment. After consideration of the comments by MSHA, the circulated standard was proposed in the **Federal Register** (44 FR 2604, January 12, 1979) and 60 days were allowed for public comment. A public hearing under section 101(a)(3) of the Mine Act was held on the issues raised by comments on May 18, 1979, in Miami, Florida. The official record was kept open until June 1, 1978 for the submission of further comments. The major issues raised by public comment and the hearing testimony are discussed below.

II. Purpose and Effect of the Final Rule

These final rules prohibit the loading of explosive material into boreholes through or with hollow drill steel ("Kelly Bar") or other devices which could be withdrawn from the borehole while containing explosive material. The standard also prohibits the use of any hollow tube, through which explosive materials are loaded, and which is capable of being withdrawn from the borehole. However, loading hose leading from pneumatic or similar loading machines and collar pipes or collar sleeves are permitted since they extend a relatively short distance down the borehole.

The use of a Kelly Bar is common practice for loading explosive materials into boreholes which do not remain open after the drill steel is removed because of high water tables and the unconsolidated character of the conglomerate rock formation. Often loose sand and rock collapse into the hole and prevent open hole loading.

In Kelly Bar loading, holes are drilled with hollow drill stems and open-end bits. After reaching the desired depth, rotation and flushing of the drill is stopped, the upper end of the drill stem is opened and explosive charges are inserted. On large diameter boreholes, a core breaker is used to keep the Kelly Bar free of cuttings and debris. After the hole is drilled to depth, the core breaker is withdrawn and the explosives are loaded into the hollow drill stem. The core breaker is repositioned over the Kelly Bar, which is then withdrawn, leaving the explosives in the hole.

There are two primary hazards associated with the Kelly Bar loading method. First, a hazardous condition can exist when explosives are loaded into a Kelly Bar which has become blocked. When the Kelly Bar is withdrawn, the explosive materials remain in the bar. Attempts to remove the charge have resulted in several accidents. The use of a core breaker, withdrawn after the hole is drilled to depth, has minimized the risk of a blocked Kelly Bar. However, the practice of using a core breaker has been neither uniformly effective nor consistent. Second, it is not always possible, after loading, to remove the Kelly Bar from the hole with a straight pull. Binding of the Kelly Bar by sand or rock, or a twisted hole, often requires that the bar be rotated or hammered to free it. This must be done while explosive materials are contained within the bar. Rotation of, and impact against, the bar can cause heat or sparks or premature detonation of the explosive materials in the bar.

Accident records show that Kelly Bar loading resulted in three deaths in one accident in 1964, four deaths and three serious injuries in three accidents in 1971, and two injuries in an accident in 1974. On construction work at the Panama Canal in 1975, the same loading practice caused five deaths and at least one serious injury in one accident. These accidents might have been avoided if a viable alternative method of loading blastholes had been used.

Research has demonstrated that expendable paper-based tubes can be conveniently placed through suitably modified Kelly Bar drills and left in place once the Kelly Bar is retracted. Packaged charges of dynamite or water gel explosives or slurry can then be loaded into the expendable tubes and fired to produce blasts which are equal to, or better than, those produced by the current method. MSHA concluded that this method, which is a viable alternative to the Kelly Bar method of loading explosives, will result in improved safety conditions for miners.

III. Discussion of the Proposed Rule and Comments

The draft rules and the proposal prohibited loading boreholes through or with hollow drill steel or other tubing or casing which could be extracted while containing explosive materials.

Comments to the proposed rules stated that the standard could be

interpreted to restrict the use of loading hose in bulk loading of explosive materials. The rules are intended to apply to any pipe, tubing or casing which may be part of a drilling unit through which explosives or blasting agents are loaded, and which could be removed from the drill hole while containing a dangerous amount of explosive materials. The rules are not intended to apply to hose used in connection with pneumatic loading or pump machines which are used as part of a loading function, as opposed to a drilling function. The final rules are not intended to prohibit slurry loading. In addition, the rules are not intended to restrict the use of collar pipe or collar sleeves, which are removed from drill holes with only a small residue of explosive remaining. A sentence clarifying these exclusions has been added to the final standard.

MSHA believes that the final rules, which permit the use of loading hose, collar sleeves and collar pipes, respond to comments concerned with ambiguity in the scope of the proposal. Additionally, certain editorial changes have been made to clarify the standard.

A substantial delay in the effective date of the final rules of up to 18 months was requested by some participants at the public hearing. Similar requests also were received from post-hearing commenters.

In reviewing the position of the affected mine operators regarding a delayed effective date, MSHA has taken into consideration several factors. First, there is the unrefuted danger associated with use of the Kelly Bar and similar types of explosive loading methods. Second, consideration of alternatives to the Kelly Bar method began over six years ago, and MSHA (formerly MESA) has considered forbidding its use for a number of years. MNMSAC first recommended adoption of a rule prohibiting use of the Kelly Bar in 1974. Finally, MSHA has taken into consideration the fact that smaller diameter expendable paper tubes can be placed into existing, unmodified, drill steel to comply with the final rule. Furthermore, the industries affected by the final rules have kept abreast of these developments as they have occurred, and they have been provided the fullest opportunity to participate in the rulemaking process. However, in an effort to assure that the rules do not impose unnecessary burdens upon the industry, MSHA has added a 120-day delayed effective date to the final standard. MSHA believes that this 120-day delayed effective date will provide operators with adequate time for compliance.

Economic Impact

It has been determined that these rules would not have major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044 or the Department of Labor's guidelines for implementing the Executive Order (Improving Government Regulations, 44 FR 5570, January 26, 1979).

It is estimated that the total cost of compliance with the rule will be approximately $500,000 during the first year. A full assessment of the economic effects of the final rules has been made by MSHA, and is available to the public.

Drafting Information

The principal persons responsible for drafting the rules are: John F. Honecker, Office of Standards, Regulations and Variances, MSHA; and Mitchell M. Eskenazi, Division of Mine Safety and Health, Office of the Solicitor, Department of Labor.

Dated: September 10, 1979.

Robert B. Lagather,

Assistant Secretary for Mine Safety and Health.

PART 55—HEALTH AND SAFETY STANDARDS—METAL AND NONMETAL OPEN PIT MINES

Part 55, Subchapter N, Chapter I, Title 30, Code of Federal Regulations is amended as follows:

A. Section 55.6 "Explosives" is amended as follows:

1. New mandatory standard 55.6–142 is added as follows:

§ 55.6 Explosives.

* * * * *

55.6–142 *Mandatory.* Explosives or blasting agents shall not be loaded into boreholes through or with either drill stem equipment or other devices which could be extracted while containing explosives or blasting agents. The use of loading hose, collar sleeves or collar pipes is permitted.

* * * * *

(Sec. 101, Pub. L. 91–173 as amended by Pub. L. 95–164, 91 Stat. 1291 (30 U.S.C. 811), and Sec. 301(c)(3), Pub. L. 95–164, 91 Stat. 1318 (30 U.S.C. 961(c)(3))

PART 56—HEALTH AND SAFETY STANDARDS—SAND, GRAVEL AND CRUSHED STONE OPERATIONS

Part 56, Subchapter N, Chapter I, Title 30, Code of Federal Regulations is amended as follows:

B. Section 56.6 "Explosives" is amended as follows:

1. New mandatory standard 56.6–142 is added as follows:

§ 56.6 Explosives.

* * * * *

56.6–142 *Mandatory.* Explosives or blasting agents shall not be loaded into boreholes through or with either drill stem equipment or other devices which could be extracted while containing explosives or blasting agents. The use of loading hose, collar sleeves or collar pipes is permitted.

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(Sec. 101, Pub. L. 91–173 as amended by Pub. L. 95–164, 91 Stat. 1291 (30 U.S.C. 811), and Sec. 301(c)(3), Pub. L. 95–164, 91 Stat. 1318 (30 U.S.C. 961(c)(3))

PART 57—HEALTH AND SAFETY STANDARDS—METAL AND NONMETAL UNDERGROUND MINES

Part 57, Subchapter N, Chapter I, Title 30, Code of Federal Regulations is amended as follows:

C. Section 57.6 "Explosives" is amended as follows:

1. New mandatory standard 57.6–142 is added as follows:

§ 57.6 Explosives.

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57.6–142 *Mandatory.* Explosives or blasting agents shall not be loaded into boreholes through or with either drill stem equipment or other devices which could be extracted while containing explosives or blasting agents. The use of loading hose, collar sleeves or collar pipes is permitted.

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(Sec. 101, Pub. L. 91–173 as amended by Pub. L. 95–164, 91 Stat. 1291 (30 U.S.C. 811), and Sec. 301(c)(3), Pub. L. 95–164, 91 Stat. 1318 (30 U.S.C. 961(c)(3))

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